

***FlyBy Math™* Alignment**
Mathematics Content Standards, Benchmarks and Performance Standards
June 2002

Strand: NUMBER AND OPERATIONS**Standard:** Students will understand numerical concepts and mathematical operations.**5-8 Benchmark: Compute fluently and make reasonable estimates.****Performance Standards: Grade 5**

3. Use estimation strategies to verify the reasonableness of calculated results.

***FlyBy Math™* Activities**

--Predict outcomes and explain results of mathematical models and experiments.

Strand: ALGEBRA**Standard:** Students will understand algebraic concepts and applications.**5-8 Benchmark: Understand patterns, relations, and functions.****Performance Standards: Grade 5**

1. Identify and graph ordered pairs in the first quadrant of the coordinate plane.

***FlyBy Math™* Activities**

--Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes.

2. Describe, represent, and analyze patterns and relationships.

--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.

3. Identify, describe, and continue patterns presented in a variety of formats (e.g., numeric, visual, oral, written, kinesthetic, pictorial).

--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.

5-8 Benchmark: Use mathematical models to represent and understand quantitative relationships.**Performance Standards: Grade 5**

2. Understand and use mathematical models such as:
- the number line to model the relationship between rational numbers and rational number operations
 - pictorial representation of addition and subtraction of rational numbers with regrouping
 - manipulatives or pictures to model computational procedures
 - graphs, tables, and charts to describe data
 - diagrams or pictures to model problem situations

***FlyBy Math™* Activities**

--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.

--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.

3. Demonstrate how a situation can be represented in more than one way.	--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.
5-8 Benchmark: Analyze changes in various contexts.	
Performance Standards: Grade 5	<i>FlyBy Math™</i> Activities
1. Recognize and create patterns of change from everyday life using numerical or pictorial representations.	--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system. --Use graphs to compare airspace scenarios for both the same and different starting conditions and the same and different constant (fixed) rates.
2. Generalize patterns of change and recognize the same general patterns presented in different representations.	--Use graphs to compare airspace scenarios for both the same and different starting conditions and the same and different constant (fixed) rates. --Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.

Strand: MEASUREMENT

Standard: Students will understand measurement systems and applications.

5-8 Benchmark: Understand measurable attributes of objects and the units, systems, and processes of measurement.

Performance Standards: Grade 5	<i>FlyBy Math™</i> Activities
2. Select and use appropriate units and tools to measure according to the degree of accuracy required in a particular problem-solving situation.	--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.
3. Solve problems involving linear measurement, weight, and capacity (e.g., measuring to the nearest sixteenth of an inch or nearest millimeter; using ounces, milliliters, or pounds and kilograms) to the appropriate degree of accuracy.	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.

5-8 Benchmark: Apply appropriate techniques, tools, and formulas to determine measurements.

Performance Standards: Grade 5	<i>FlyBy Math™</i> Activities
1. Solve measurement problems using appropriate tools involving length, perimeter, weight, capacity, time, and temperature.	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.
2. Select and use strategies to estimate measurements including length, distance, capacity, and time.	--Conduct simulation and measurement for several aircraft conflict problems. --Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.

Strand: DATA ANALYSIS AND PROBABILITY

Standard: Students will understand how to formulate questions, analyze data, and determine probabilities.

5-8 Benchmark: Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.

Performance Standards: Grade 5

1. Construct, read, analyze, and interpret tables, charts, graphs, and data plots.

***FlyBy Math™* Activities**

--Represent distance, rate, and time data using tables, line plots, bar graphs, and line graphs.

--Predict outcomes and explain results of mathematical models and experiments.

2. Construct, interpret, and analyze data from graphical representations and draw simple conclusions using bar graphs, line graphs, circle graphs, frequency tables, and Venn diagrams.

--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.

--Use tables, bar graphs, line graphs, equations, and a Cartesian coordinate system to draw conclusions.

4. Organize and display single-variable data in appropriate graphs and representations.

--Choose among tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.

5. Organize, read, and display numerical (quantitative) and non-numerical (qualitative) data in a clear, organized, and accurate manner including correct titles, labels, and intervals or categories including:

- frequency tables
- stem and leaf plots
- bar, line, and circle graphs
- Venn diagrams
- pictorial displays
- charts and tables

--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.

--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.

5-8 Benchmark: Select and use appropriate statistical methods to analyze data.

Performance Standards: Grade 5

1. Organize and display single-variable data in appropriate graphs and representations and determine which types of graphs are appropriate for various data sets.

***FlyBy Math™* Activities**

--Choose among tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.

5-8 Benchmark: Develop and evaluate inferences and predictions that are based on data.

Performance Standards: Grade 5

2. Compare a given prediction with the results of an investigation.

***FlyBy Math™* Activities**

--Compare predictions, calculations, and experimental evidence for several aircraft conflict problems.